CLAIMS

What is claimed is:

1. A digitally-controlled pyroelectric signal sampling circuit, which comprises:

a trigger-signal generating unit for generating a trigger signal, a first sampling signal, and a second sampling signal, which are substantially fixed in frequencies and timings irrespective of temperature changes in the ambient environment;

a light source module, which is triggered by the trigger signal from the trigger-signal generating unit to emit an alternating light beam;

a pyroelectric sensor module for sensing the emitted alternating light beam from the light source module to thereby generate an alternating pyroelectric signal;

a first sample-and-hold circuit, which is clocked by the first sampling signal generated by the trigger-signal generating unit, to sample each upper peak of the alternating pyroelectric signal from the pyroelectric sensor module and thereby generate a first sampled signal;

a second sample-and-hold circuit, which is clocked by the second sampling signal generated by the trigger-signal generating unit, to sample each bottom peak of the alternating pyroelectric signal from the pyroelectric sensor module and thereby generate a second sampled signal; and

a subtraction circuit for performing a subtraction operation on the first sampled signal generated by the first sample-and-hold circuit and the second sampled signal generated by the second sample-and-hold circuit to thereby obtain a difference signal;

wherein the difference signal from the subtraction circuit is substantially a direct current (DC) output and serves as an output of the digitally-controlled pyroelectric signal sampling circuit.

2. The digitally-controlled pyroelectric signal sampling circuit of claim 1, wherein the trigger-signal generating unit comprises:

a crystal oscillator for generating an oscillating signal; and

a microprocessor, which is driven by the oscillating signal from the crystal oscillator to generate the trigger signal, the first sampling signal, and the second sampling signal.

3. The digitally-controlled pyroelectric signal sampling circuit of claim 1, wherein the pyroelectric sensor module further provides an amplification function capable of amplifying the alternating pyroelectric signal output therefrom by a specified gain.

4. The digitally-controlled pyroelectric signal sampling circuit of claim 1, wherein the light source module is an infrared type of light source module.

5. A digitally-controlled pyroelectric signal sampling circuit, which comprises:

a crystal oscillator for generating an oscillating signal;

a microprocessor, which is driven by the oscillating signal from the crystal oscillator to generate a trigger signal, a first sampling signal, and a second sampling signal, which are substantially fixed in frequencies and timings irrespective of temperature changes in the ambient environment;

a light source module, which is triggered by the trigger signal from the microprocessor to emit an alternating light beam;

a pyroelectric sensor module for sensing the emitted alternating light beam from the light source module to thereby generate an alternating pyroelectric signal;

a first sample-and-hold circuit, which is triggered by the first sampling signal generated by the microprocessor, to sample each upper peak of the alternating pyroelectric signal from the pyroelectric sensor module and thereby generate a first sampled signal;

a second sample-and-hold circuit, which is triggered by the second sampling signal generated by the microprocessor, to sample each bottom peak of the alternating pyroelectric signal from the pyroelectric sensor module and thereby generate a second sampled signal; and

a subtraction circuit for performing a subtraction operation on the first sampled signal generated by the first sample-and-hold circuit and the second sampled signal generated by the second sample-and-hold circuit to thereby obtain a difference signal;

wherein the difference signal from the subtraction circuit is substantially a direct current (DC) output and serves as an output of the digitally-controlled pyroelectric signal sampling circuit.

6. The digitally-controlled pyroelectric signal sampling circuit of claim 5, wherein the pyroelectric sensor module further provides an amplification function capable of amplifying the alternating pyroelectric signal output therefrom by a specified gain.

7. The digitally-controlled pyroelectric signal sampling circuit of claim 5, wherein the light source module is an infrared type of light source module.

8. A digitally-controlled pyroelectric signal sampling circuit, which comprises:

a crystal oscillator for generating an oscillating signal;

a microprocessor, which is driven by the oscillating signal from the crystal oscillator to generate a trigger signal, a first sampling signal, and a second sampling signal, which are substantially fixed in frequencies and timings irrespective of temperature changes in the ambient environment;

an infrared light source module, which is triggered by the trigger signal from the microprocessor to emit an alternating infrared beam;

a pyroelectric sensor module for sensing the emitted alternating infrared beam from the infrared light source module to thereby generate an alternating pyroelectric signal;

a first sample-and-hold circuit, which is triggered by the first sampling signal generated by the microprocessor, to sample each upper peak of the alternating pyroelectric signal from the pyroelectric sensor module and thereby generate a first sampled signal;

a second sample-and-hold circuit, which is clocked by the second sampling signal generated by the microprocessor, to sample each bottom peak of the alternating pyroelectric signal from the pyroelectric sensor module and thereby generate a second sampled signal; and

a subtraction circuit for performing a subtraction operation on the first sampled signal generated by the first sample-and-hold circuit and the second sampled signal generated by the second sample-and-hold circuit to thereby obtain a difference signal;

wherein the difference signal from the subtraction circuit is substantially a direct current (DC) output and serves as an output of the digitally-controlled pyroelectric signal sampling circuit.

9. The digitally-controlled pyroelectric signal sampling circuit of claim 8, wherein the pyroelectric sensor module further provides an amplification function capable of amplifying the alternating pyroelectric signal output therefrom by a specified gain.